REQUEST FOR PROPOSALS

CENTRAL CALIFORNIA OZONE STUDY (CCOS)

Understanding Relationships between Changes in Ambient Ozone and Precursor Concentrations and Changes in VOC and NOx Emissions from 1990 to 2004 in Central California

September 8, 2005

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1. BACKGROUND

Significant emissions reductions have occurred in Central California over the last 14 years, especially with stationary point sources and with on-road mobile sources. However, trends in 1-hour and 8-hour ozone concentrations at many peak monitoring sites in the San Joaquin Valley and portions of Sacramento have been only slightly downward, some insignificant, or even slightly upward. There is significant interest in understanding why the downward trend in 1-hour and 8-hour ozone concentrations is not as sharp as was anticipated in ozone control strategies for these regions.

Analyses carried out by Reynolds, Blanchard, and Ziman (2003) and Lehrman et al. (2004) considered attainability of the 8-hour ozone standard in Central California and characterized the routine ambient monitoring data for 1990-2000. These studies show that concentrations of NOx and CO (used as a surrogate for mobile source VOCs) and to a limited extent, PAMS VOC measurements decreased over the 10-year period. Ambient ozone measurements did not show statistically significant declines in most of the San Joaquin Valley, particularly for the 8-hour ozone standard, taking into account meteorology.

Few analyses of air quality data from the San Joaquin Valley have included a careful accounting for meteorological effects; in particular, groups of days or hours affected by emissions from the same source region(s) have not been analyzed separately. Davis et al. (1998) and Larsen (1999) studied AQ data from other areas and found that source-receptor relationships were important elements of analyses that relate air quality trends to meteorology.

Davis et al. (1998) used a 2-stage approach to analyze daily peak ozone concentrations in the Houston area. In the first stage, Davis et al, formed clusters of days representing various meteorological types of ozone episodes. In the second stage, they used generalized additive models, one per cluster, to relate the daily peak ozone to the meteorological variables. The models within clusters indicated that transport from sources to receptors strongly affected ozone levels in the Houston area.

Larsen (1999) used a similar two-stage approach, with clustering followed by a linear model within each cluster. Larsen, however, limited the clustering variables to the pressure and temperature gradients that determine general airflow patterns. These patterns, in turn, determine the transport of pollutants from sources to receptors within and between regions. The combination of airflow clustering and models within clusters proved to be exceptionally effective in explaining daily maximum ozone in the San Francisco Bay Area.

2. PURPOSE AND DESCRIPTION OF THE STUDY

The study is designed to advance our understanding of air quality in the Central California Ozone Study (CCOS) domain (especially in the San Joaquin Valley) and will be carried out in two phases. In Phase 1, the study will clarify the relationships between trends in emissions inventories and trends in ambient levels of ozone precursors. In Phase 2, the study will elucidate relationships between trends in ozone precursors and trends in ambient ozone concentrations. The study will include an assessment of why peak ozone concentrations have not responded as expected given the emissions reductions estimated to have taken place. In this regard, an assessment of the uncertainty of emissions and ambient trends will be needed.

In order to analyze emissions trends, the most recent seasonal emissions inventory for NOx, VOCs and CO needs to be prepared in a gridded format (CCOS modeling domain) and disaggregated by major source categories. Once done, that inventory needs to be back cast to 1990. It is anticipated that there will be some major issues to overcome in preparing the seasonal inventories, including but not limited to changes in procedures for assigning sources to source categories, uncertainties associated with different source categories, and surrogates for some sources.

Similarly, changes in ambient concentrations for each monitoring site need to be generated prior to any analysis. Several indicators that provide meaningful characterizations of ambient air quality trends should be assessed. Target values for attainment plans have been aimed at near worst case design values. These and other ambient trend indicators should be assessed that include measures of worst case, exposure, design targets, days over the CAAQS and NAAQS, and other worthwhile measures of trends.

3. SCOPE OF WORK

Note to Bidders: While some contractors may have both the expertise in emissions inventory and data analysis techniques, we encourage teaming to assure expertise in all areas required for this project.

As indicated in the previous section, the work will be conducted in two major phases, separated by a decision point as follows:

Phase 1 - Clarify the Relationships Expected to Exist Between Trends in Ambient Data and Trends in Emissions Inventories:

1. What basinwide, subregional, and site-specific ambient data trends exist?
2. What emission sources are adequately characterized at the basinwide, subregional, and site-specific level to facilitate trend analyses at each level

(e.g., based on a multi-month or seasonal gridded inventory for the 2002 base year inventory)?

3. How well are emission trends at the basinwide, subregional, and site-specific level expected to correlate with basinwide, subregional, and site-specific ambient trends from Phase 1, Question 1?
4. What categories of emissions are expected to track ambient trends best at each basinwide, subregional, and site-specific analysis resolution?
5. Based on the findings to date, what relationships between trends in ambient data and emissions data are expected to be elucidated in Phase 2?
6. What uncertainties are associated with the proposed Phase 2 approach?
7. Specifically how might Phase 2 findings be used as a basis to reach ambient 1-hour and 8-hour ozone attainment levels?
8. Decision Point - Do Phase I findings justify proceeding with Phase 2? A presentation will be given to the Technical Committee (TC) followed by a TC decision as to whether to proceed to Phase 2.

Phase 2 - Elucidate Relationships Between Ambient Trends and Emission Trends and Provide Suggested Strategies for Reaching 1-hour and 8-hour Ozone Attainment:

1. Based on Phase 1 findings, what basinwide, subregional, and site-specific emission data trends exist (e.g., based on multi-season and multi-year gridded inventories spanning 1990 through 2004)?
2. What relationships exist between trends in ozone precursors and trends in ambient ozone concentrations over the 1990 through 2004 period?
3. What findings can be used towards reaching ambient 1-hour and 8-hour ozone attainment levels?

The questions above should be explicitly addressed in each associated project deliverable.

The Contractor selected for this work will develop a mathematical strategy for analyzing trends in the concentrations of ozone and ozone precursors for the period of years 1990 through 2004, by subregion and selected sites, for Central California. It is expected that this strategy will be designed with the goal of separating statistically significant trends in concentrations of ozone and ozone precursors that occurred over time from meteorological and regional factors that also affected the concentrations. In the proposal, the Contractor should describe the mathematical strategy; the proposal will be judged, in part, on its creativity and likelihood for success. In the proposal, the Contractor should also demonstrate knowledge and understanding of the mathematical techniques and strategies that will be applied. It is not the intent of this request for proposals to lock the Contractor into any single strategy or mathematical approach. In the proposal, the Contractor may propose alternative strategies or approaches to the analysis, the advantages of which may only become apparent after the analysis has begun. The contractor will include trend indicators that are associated with population, area, and highest exposure.

The Contractor will acquire measurements of ozone and ozone precursors recorded within Central California during the years 1990 through 2004. These data will include (at a minimum) measured concentrations of ozone, oxides of nitrogen, and carbon monoxide. The Contractor will review these data by subregion (as described under Task 2). Trends will be prepared for NOx, CO, and ozone at all sites with sufficient data for all or a portion of the years from 1990 through 2004. The trend analyses will include a careful accounting for meteorological influences.

Trend analyses will address basinwide, subregional, and site-specific relationships.

There are more limited records available of measurements of hydrocarbon concentrations in various forms (e.g., total hydrocarbons, non-methane hydrocarbon, non-methane organic carbon). The Contractor will review the hydrocarbon observational records by subregion to determine if there are records of suitable length and duration to represent trends in regional ROG emissions.

The Contractor will review the geography and meteorological patterns of each of the locations selected for trends analysis. Based on this review, the Contractor will identify the geographical and regional and local meteorological influences that likely determine the temporal variations in ozone concentrations. The Contractor will also acquire synoptic and local-scale meteorological records, and geographic, topographic, or land use data for the study period needed for the analysis.

Using the accumulated data sets and the mathematical strategies proposed, the Contractor will determine if reliable trends in ozone concentrations or in the concentrations of ozone precursors selected for analysis can be determined for the years 1990 through 2004. The analysis is to consider overall, regional, and micro-scale (site specific) trends in ozone and its precursors. Trends will be reported in units of ppb/yr (parts per billion per year) or ppbC/yr (parts per billion carbon per year) as is appropriate. For each pollutant analyzed, by subregion, the Contractor will report the trend, the uncertainty limits, and confidence intervals. The uncertainty associated with meteorological variability will be assessed and where feasible meteorological adjustments will be made to the pollutant data. Determinations of the meteorological and pollutant cycles in the CCOS region should also be made.

In addition to characterizing ambient air quality trends, the Contractor will develop seasonal emission inventories of ozone precursors covering the period from 1990 to 2004. These emissions estimates should be disaggregated by appropriate source categories and incorporated into a GIS format to assist in developing spatial displays of emissions changes over 1990 to 2004. The gridded format will facilitate the designation of the zone of influence from which emissions totals will be analyzed for trends. The study will identify emissions (including the source categories which represent those emissions) associated with the source-receptor relation for each site considering the pertinent meteorological scenarios. This should facilitate the analysis of year-to-year change and how those changes lead to a set of trends, one for each

meteorological scenario over time. It is anticipated that this approach will eliminate the need to develop empirical meteorological adjustments for the entire ozone season.

Upon characterizing trends in ambient ozone and precursors as well as trends in ozone precursor emissions, the Contractor will analyze this information to provide insights into the effectiveness of implemented emission controls in reducing ambient ozone concentrations in Central California.

In the project final report, the Contractor will describe the methodologies used for all calculations done as part of this project in detail. The details will include and not be limited to the independent variables, a parameter description and justification for each cluster, category, or component used in the analysis. Any customized software used for this project will be made available to the ARB at the end of the project.

Phase 1. Clarify the Relationships Expected to Exist Between Trends in Ambient Data and Trends in Emissions Inventories

Task 1: Acquire Data and Prepare a Phase 1 Final Work Plan

Task 1a. Acquire Emissions Data: The Contractor will collect base year (2002), forecasted (>2002), and backcasted (<2002) emission estimates for the 1990 through 2004 period for stationary, area-wide, on-road mobile, off-road mobile, and natural sources. The Contractor will review any and all reports on and analyses of the current emissions inventory (2002 base year). The review will include, but not be limited to the following: methodology uncertainty; spatial and temporal assignment for sources within the inventory; and reports and analyses on emissions trends from 1990 through 2004. The Contractor is expected to work closely with California Air Resources Board (ARB) and appropriate local district emissions inventory and modeling staff to identify problems with the current inventory, differences in how emissions have been assigned to source categories in the past and currently, and issues associated with spatial and temporal assignment of emissions. Included in this work will be a review of how control programs and effectiveness factors are assigned, and if there is a need to revise these factors.

In addition to the above, the Contractor will stay abreast of findings from other relevant CCOS-sponsored projects and become familiar with the California Almanac of Emissions and Air Quality (http://www.arb.ca.gov/aqd/almanac/almanac.htm).

Task 1b. Acquire Ambient Data: The Contractor shall review any and all available analyses and reports on ambient VOC, NOx and CO concentrations for Central California for the ozone season. The Contractor, working with ARB and the appropriate local districts, shall identify what ambient data are available during the period from 1990 through 2004 for use in the study, the quality of the data, and acquire the data from the appropriate agencies.

Task 1c. Acquire Meteorological and Other Data: The Contractor will acquire all of the observational meteorological data and any geographic, topographic, demographic, or

land use data required for the analysis. Although long-term data sets that cover 1990 through 2004 are desirable, some types of data with shorter periods of record may still be useful for selected purposes. For example, data from radar wind profilers have been collected more recently, and these should also be considered for use in specialized analyses, including analyses that may reveal the effectiveness of methods used to assign days to source-receptor categories.

Task 1d. Preparation of a Phase 1 Final Work Plan: Based on the available emissions and ambient data, the Contractor shall prepare a Phase 1 draft work plan that will describe in detail the technical efforts to be undertaken in Tasks 2, 3, and 4.

The Contractor will meet with the Technical Committee (TC) to discuss the plan. The work plan will also identify the software, input and output files, and documentation that will be delivered at the end of the study. Responding to the comments provided by the TC, the Contractor will prepare a Phase 1 final work plan. Work on subsequent tasks is not to commence prior to receipt of authorization from the TC.

Task 2. Ambient Trends Analyses: The Contractor shall carry out ambient trends analyses for ozone, NOx, CO, and where appropriate, VOC at pertinent sites in accordance with the final work plan. As mentioned previously, trend analyses will address basinwide, subregional, and site-specific relationships.

The Contractor will work with the following nine (9) subregions of the CCOS domain (see attached list of associated monitoring sites):

- Southern Bay Area
- Northeastern Bay Area
- Eastern Bay Area
- Urban/suburban Sacramento
- Northern Sierra Foothills
- Southern Sierra Foothills
- Northern San Joaquin Valley
- Central San Joaquin Valley
- Southern San Joaquin Valley

These subregions may be combined or modified with the permission of the contract manager, where such modifications will improve the likelihood of meaningful results.

With respect to each subregion, the Contractor will analyze the assembled data sets to determine major airflow categories associated with meteorological regimes that either lead to high ozone, or would otherwise be useful in developing a robust analysis. The categories will be determined using clusters of similar days, where similarity is based on synoptic-scale pressure gradients (such as, between rawinsonde locations) and meso-scale temperature gradients (less than 100 miles). Clusters may be defined on the basis of a smaller set of principle components for pressure gradients and for temperature gradients if desired.

The Contractor will identify a set of air quality indicators (statistics) for which trends will be determined. The trends will cover the years from 1990 through 2004 based on subregional daily maximum 1-hour and 8-hour ozone data from May through October each year. For each combination of subregion and airflow category with adequate numbers of observations annually, the Contractor will determine trends for ozone, oxides of nitrogen, and carbon monoxide. The Contractor will evaluate the hydrocarbon data, and where such data are sufficient, hydrocarbon trends will be determined.

The Contractor will consider the impact – in terms of both technical accuracy and project resources -- of using default meteorological inputs versus year and season-specific meteorological data to derive meteorologically-sensitive emission estimates used for this project.

Using the CCOS modeling grid system coupled with locations of ambient monitors, the contractor will identify grid-cells for which emission sources are likely to impact measured 1-hour and 8-hour ozone concentrations for each of the major airflow categories identified in Task 2.

[Note: For this work, the maximum value and the number of exceedances of a standard are not acceptable indicators. Appropriate indicators might include the average of the highest 1-10 values, 11-20, etc., for each year. Smoothing of the trend may be appropriate, but unrealistic "straight-line" models are not useful.]

Task 3. Examine Relationships Expected to Exist Between Trends in Ambient Data and Trends in Emissions Inventories: Determine which emission sources are adequately characterized at the basinwide, subregional, and site-specific level to facilitate trend analyses at each level (e.g., based on a multi-month or seasonal gridded inventory for the 2002 base year inventory). Assess how well emission trends at the basinwide, subregional, and site-specific level are expected to correlate with basinwide, subregional, and site-specific ambient trends from Task 2. Identify which categories of emissions are expected to track ambient trends best at each basinwide, subregional, and site-specific analysis resolution. Based on the findings to date, determine which relationships between trends in ambient data and emissions data are expected to be elucidated in Phase 2. Identify the key uncertainties associated with the proposed Phase 2 approach. Specifically, indicate how Phase 2 findings might be used as a basis to reach ambient 1-hour and 8-hour ozone attainment levels.

Task 4. Phase 1 Documentation and Phase 2 Work Plan: Document the findings of Phase 1 in a draft report. If the findings justify the conduct of Phase 2, prepare a draft work plan describing the proposed Phase 2 activities. Meet with the CCOS Technical Committee to discuss the findings of Phase 1 and the proposed Phase 2 work plan. Implement appropriate modifications to the draft report and Phase 2 work plan based on comments provided by the Technical Committee. In the event that the Technical Committee does not authorize Phase 2 activities, provide all data, software, and documentation in accordance with the work plan.

Phase 2. Elucidate Relationships Between Ambient Trends and Emission Trends and Provide Suggested Strategies for Reaching 1-hour and 8-hour Ozone Attainment

Work on Phase 2 is not to be initiated without written authorization of the ARB Program Manager.

Task 5. Emissions Trends

Task 5a. Prepare Month-Specific Emissions Inventories: The contactor shall prepare month-specific gridded emissions inventories disaggregated by appropriate source categories. Historical point source emissions should be used where they are available. Emissions from stationary aggregated and area-wide source categories should be back-casted for each year and month back to 1990 to incorporate the latest emission inventory methodologies available (One notable exception is pesticides, where historical data should be used). Month-specific emissions will be forecasted to 2004 to complete the analysis period. The Contractor will prepare spatial maps for each major source category for each analysis period for each pollutant as described in the final work plan.

Task 5b. Emissions Trends Analysis: The Contractor will use the gridded emissions data from Task 5a to prepare emissions trends for each pertinent ambient air quality monitor being used in the analyses. Uncertainties within the emissions should be included in the trends analysis. Identify emissions (including the source categories which represent those emissions) associated with the source-receptor relation for each of the major airflow categories identified in Task 2.

Task 6. Analysis of Ambient and Emissions Trends: Using one or more analytical techniques identified in the work plan, analyze the ambient and emissions trends for VOC, NOx and CO to explain the ambient trends for ozone. Identify findings that are clearly supported by the analyses, those which are more speculative, and make recommendations for additional work that might help clarify our understanding.

Task 7. Final Report and Journal Paper: The Contractor will prepare a draft final report that discusses the work carried out in both Phases 1 and 2 and submit it to the TC for review. The draft report will be finalized responding to comments from the TC. Once that is completed, the Contractor shall prepare a draft journal paper, and submit it to the TC for review. Upon review and revision, the Contractor shall identify a journal to submit for publication, and do so upon concurrence of the TC. The Contractor will be responsible for paying all publication costs.

Task 8. Provision of Data, Software, and Documentation: Transfer of all data sets, computer code, and customized software as well as documentation for all of these items to ARB staff in a well organized and documented electronic package.

Task 9. Meetings: The Contractor shall budget for four meetings in Sacramento, CA. The meetings will occur at the inception of the study and upon completion of Tasks 1, 4 and 7, after the draft final report is prepared.

- Kickoff Meeting. Before work on the project begins, the Contractor will meet with the CCOS Technical Committee. The overall work plan will be reviewed at this meeting. The Contractor will present an overview of the proposed mathematical strategy to be used in this project and should be prepared to answer questions from persons not very familiar with the mathematical concepts.

- Task 1 Meeting. This meeting will be planned after the Contractor has acquired the data sets needed for the analysis and has had an opportunity to review them. In this meeting, the Contractor will report on data availability and general quality. The Contractor will report on the sites that have been selected for trend analysis and provide an overview of independent variables for each subregion. The Contractor will also be asked to describe any modifications to the work plan or mathematical strategies that may be suggested by the data during the data review process.

- Task 4 Meeting. At this meeting, the Contractor will make a presentation describing Phase 1 of the project and its findings to the CCOS Technical Committee. Recommendations will also be made concerning the conduct of Phase 2 of the study.

- Task 7 Meeting. At this meeting, the Contractor will make a presentation describing Phase 2 of the study and its findings to the CCOS Technical Committee.

Exhibit 1. List of monitoring sites associated with selected subregions of the CCOS domain.

- Southern Bay Area
  - Fremont
  - Gilroy
  - Los Gatos
  - San Jose - 4th Street
  - San Jose - Piedmont
  - San Martin

- Northeastern Bay Area
  - Bethel Island
  - Concord
  - Pittsburg
  - Vallejo

- Eastern Bay Area
  - Livermore - Old First Street
  - Livermore – Rincon

- Urban/suburban Sacramento
  - Folsom - City Yard
  - Folsom - Natoma Street
  - North Highlands
  - Rocklin-Sierra College
  - Roseville-N Sunrise Blvd
  - Sacramento - Del Paso Manor
  - Sacramento - El Camino and Watt
  - Sacramento - T Street
  - Sloughhouse

- Northern Sierra Foothills
  - Auburn - DeWitt C Avenue
  - Cool
  - Grass Valley - Litton Building
  - Placerville - Gold Nugget Way

- Southern Sierra Foothills
  - Five Mile Learning Center
  - Jackson
  - Jerseydale
  - San Andreas
  - Sonora
  - Yosemite

Exhibit 1. (Concluded.)

- Northern San Joaquin Valley
  - Merced-S Coffee Avenue
  - Modesto - 14th Street
  - Stockton - Hazleton
  - Stockton - Mariposa
  - Tracy-24371 Patterson Pass Road
  - Turlock - S Minaret Street

- Central San Joaquin Valley
  - Fresno - 1st Street
  - Fresno - Drummond
  - Fresno - Sierra Skypark #2
  - Madera
  - Clovis
  - Parlier
  - Visalia

- Southern San Joaquin Valley
  - Arvin - Bear Mountain Road
  - Bakersfield - 5558 California Avenue
  - Bakersfield - Golden State Highway
  - Edison
  - Maricopa
  - Oildale - 3311 Manor Street

4. REFERENCES

Davis, J.M., Eder, B.K., Nychka, D., & Yang, Q., Modeling the effects of meteorology on ozone in Houston using cluster analysis and generalized additive models. *Atmospheric Environment*, 1998, 32, 2505-2520.

Larsen, L. A semi-empirical model relating meteorology and ozone in the San Francisco Bay Area. *Air Pollution VII*, WIT Press, Southampton, UK, 1999.

Lehrman, D.; Bush, D.; Knuth, B.; Blanchard, C.; Fairley, D. *Characterization of the CCOS 2000 Measurement Period*, Final Report (Contract 01-2CCOS), Technical & Business Systems, Inc., Santa Rosa, CA, March 1, 2004.

Reynolds, S.D.; Blanchard, C.L.; Ziman, S.D. Understanding the effectiveness of precursor reductions in lowering 8-hr ozone concentrations; *J. Air & Waste Manage. Assoc.* **2003**, 53, 195-205.

5. MANAGEMENT STRUCTURE

The CCOS is a program involving many sponsors and participants. Three entities are involved in the overall management of the Study. The San Joaquin Valleywide Air Pollution Study Agency, a joint powers agency (JPA) formed by the nine counties in the Valley, directs the fund-raising and contracting aspects of the Study. A Policy Committee comprised of four voting blocks (State, local, and federal government, and the private sector) provides guidance on the Study objectives and funding levels. The Policy Committee approves all proposal requests, contracts, and reports. A Technical Committee parallels the Policy Committee in membership and provides overall technical guidance on proposal requests, direction and progress of work, contract work statements, and reviews all technical reports produced from the Study.

On a day-to-day basis, the ARB is responsible for management of the Study under the direction of the Program Manager, Chief of the ARB Modeling and Meteorology Branch. The ARB monitors contracts with the participants and is the primary interface between Contractors, the Policy and Technical Committees, and the JPA. Members of the Technical Committee are active participants in modeling analyses and in the review of proposals, reports, and publications.

6. STUDY BUDGET

The Contractor is to provide an estimate of the cost for the proposed study. Depending on the estimated cost, the project may be funded in phases. In this case, work on

Phase 2 will be dependent on the ability of the Policy and Technical Committees to secure adequate funding.

7. SCHEDULE

The study is to be completed within 14 months. Shown below is an approximate time line for the various stages of this contract. Potential Contractors can assume that comments on draft documents will be received within 30-days following submittal.

• Release of the RFP	September 8, 2005
• Submission of bids	September 28, 2005
• Contract Initiation	Mid October 2005
• Kickoff meeting	Within 3 weeks of contract initiation
• Submit Phase 1 draft work plan	2 months after contract initiation
• Task 1 meeting	Within 3 months of contract initiation
• Submit Phase 1 final work plan	30 days after receipt of comments on draft work plan
• Submit Phase 1 draft final report and Phase 2 draft work plan	6 months after contract initiation
• Task 4 meeting	Within 7 months after contract initiation
• Submit Phase 1 final report and Phase 2 final work plan	30 days after receipt of comments on draft final report and draft work plan
• Submit draft final report, draft manuscript, software, data files, and documentation	12 months after contract initiation
• Task 7 meeting	Within 13 months of contract initiation
• Submit final report and final manuscript	14 months after contract initiation

8. ADMINISTRATION

The group selected to conduct this work will report to the ARB Program Manager. The period of performance of this contract will be 14 months, with work expected to commence in approximately mid October of 2005. Contract performance is not to begin

until a contract is fully approved by the San Joaquin Valleywide Air Pollution Study Agency.

9. CONTRACT REQUIREMENTS

A. Reporting and Other Requirements

The Contractor shall deliver a draft Phase 1 and Phase 2 work plans describing the analyses to be performed in this study. Responding to comments provided by the Technical Committee, the Contractor will submit final work plans within one month of receipt of comments from the Technical Committee. Upon completion of the technical work associated with Phase 1, the Contractor will submit a draft final report. At the end of the study, the Contractor will submit a draft final report incorporating the findings of both Phases 1 and 2, as well as a draft manuscript suitable for publication in a peer reviewed journal. The Contractor will also deliver all software, data files, and appropriate documentation in accordance with the specifications provided in the work plan. Within 30 days of receipt of comments from the Technical Committee, the Contractor will submit final reports and a final manuscript for submission to a suitable technical journal for peer review and publication.

The Contractor will attend four one-day meetings: at the outset of the study and upon completion of Tasks 1, 4 and 7. It should be assumed that these meetings will be held in Sacramento, California.

The Contractor shall deliver monthly progress reports to the ARB Program Manager. Payment of invoices will not be made until receipt of the associated progress report.

The Contractor shall deliver invoices to the ARB Program Manager. With respect to the payment period completed, the invoices shall set forth in detail by task, in accordance with the contract budget, charges for time expended on the project, including classification of personnel involved in such time expenditure, and the monthly, weekly, or hourly rates for such personnel, as appropriate. The invoices shall also contain an itemization of all materials used for the project, including the purpose of its use and its cost. All work billed for in each invoice must be covered in an associated progress report. Therefore, if invoicing is done more frequently than quarterly, progress reports coincident with the payment period must also be provided.

The Contractor shall deliver draft Phase 1 and Phase 2 (as appropriate) work plans, and draft Phase 1 and overall (as appropriate) final reports, and a draft manuscript for publication, each with two hardcopies, one electronic copy in Adobe Acrobat (PDF) format, and one in Microsoft Word (DOC) format. The Contractor will receive comments on these reports within 30 days of submission, with revisions due within 30 days after receipt of review comments (also with 2 hardcopies, PDF, and DOC

versions). The Contractor will be responsible for paying all costs associated with publication of the manuscript.

All model source codes, input and output files, and pertinent documentation will be provided in accordance with the specifications developed in the work plan.

B. Correspondence

All technical correspondence regarding this contract should be sent to the Program Manager at the address listed below:

Mr. John DaMassa, Chief
Modeling & Meteorology Branch
Planning and Technical Support Division
California Air Resources Board
Program Manager
Central California Air Quality Studies
1001 "I" Street
Sacramento, California 95814

C. Contract Language

A copy of the contract language is presented in Appendix A. Any proposed revisions to the contract language **must** be included as part of the proposal. Questions regarding the contract should be directed to the JPA attorney at the address provided below:

Mr. Philip Jay
San Joaquin Valleywide Air Pollution Study Agency Counsel
San Joaquin Valley Unified Air Pollution Control District
1990 East Gettysburg Avenue
Fresno, California 93727
(559) 230-6033

10. PROPOSAL PREPARATION AND EVALUATION GUIDELINES

A. Proposal Contents

Proposals should convey a maximum of technical content related to the relevant task with a minimum of extraneous material. Proposals should convey a high degree of technical understanding and innovation while demonstrating the ability to present complex scientific results to technically qualified decision-makers. Vague references to "standardized", "EPA", "ARB", or other unexplained and non-documented methods will be considered unresponsive and rejected.

The proposal should be clear and concise (typically not more than 30 pages maximum for each question or task, and preferably exclusive of resumes and proponent facilities/experience, which should also be minimal and can be incorporated by reference to a corporate web site). The proposal should address the following issues:

1. *The technical approach for answering each question/task.* The technical approach should build upon, verify or challenge, and add to existing knowledge. The technical approach should include re-formulation or better articulation of the tasks, a brief summary of current knowledge on the topic from central California and elsewhere (where relevant), available methods to answer the questions and a rationale for selecting the proposed method(s), a description of the analysis approach and the data to be used, methods to verify the generality of the results, methods to qualify the conclusions, and a brief outline for the final report and publication.

2. *Staffing, management oversight, and data management.* Extensive management oversight is not solicited or encouraged, as it is expected that each task will require substantial commitment and participation of an experienced specialist in the area with appropriate delegation to support personnel.

3. *A brief statement of qualifications for the proposed participants and a description of the duties they will perform, including a specific discussion of relatively recent project experience.* Greater detail may be incorporated by reference to a corporate website (preferred) or as a standard package. Extensive corporate experience is not as important as the qualifications of the principals who will be dedicated to the proposed task.

4. *The estimated budget for each task should be summarized on the cost reporting form shown in Table 1.* This cost summary form should be supplemented with appended documentation detailing:

    a. Commitments and hourly rates for personnel.

    b. Types and costs for travel, equipment, or supplies procured as part of the project.

    c. One-time costs that apply to all tasks, but that are only listed in one (identify the costs and the tasks in which they are included or excluded).

    d. Expected cost increases such as annual salary adjustments should also be specified. It is anticipated that this contract will be awarded on a time and materials basis with a maximum (not to exceed) value.

5. *The management approach for dealing with routine operations, unexpected problems, and changes in work scope.*

6. *A project schedule, describing the start and end dates for each task, and the completion date for each deliverable specified in the scope of work.*

B. Guidelines and Criteria for Proposal Evaluation

Respondents should demonstrate knowledge and experience in the analysis of ambient air quality and emissions trends. A good understanding should be shown of the SIP process and historical ozone attainment demonstrations in central California. The following specific criteria will be used to evaluate the proposals:

1. Technical approach for implementing the tasks specified under the Scope of Work. (30 points)

2. The experience, competence, capability, and commitment of the proposed personnel to be assigned to the project. (30 points)

3. The proponent's technical performance on similar, past projects and the extent to which the participant can draw directly on past experience in meeting the requirements of the RFP. (25 points)

4. The overall proposed cost of the work as well as cost-effectiveness, and the proponent's willingness to enter into a contractual agreement that minimizes the risk of cost overrun. (15 points)

C. Conflict of Interest Requirements

Government Code Section 1090 generally prohibits a public official from being financially interested in a contract which he or she has made or participated in an official capacity. Under certain circumstances, persons who perform work pursuant to a contract with a government agency may be subject to the restrictions of Government Code Section 1090.

With respect to CCOS, this means that based on participation in the planning of the Study, certain consultants are precluded from participating in all or some of the post-planning contracts. This preclusion would apply to these consultants as either a prime Contractor or a Subcontractor. In most cases, whether a particular consultant is eligible to bid will depend on an analysis of all of the circumstances surrounding the consultant's earlier participation in CCAQS and the work that the consultant now proposes to perform.

Any response to this RFP which includes a paid participant who is ineligible based on Government Code Section 1090 will be rejected during the format review of the proposals.

Questions concerning the eligibility of a potential bidder must be directed to the JPA attorney at the address provided below prior to the preparation of a proposal:

Mr. Philip Jay
San Joaquin Valleywide Air Pollution Study Agency Counsel
San Joaquin Valley Unified Air Pollution Control District
1990 East Gettysburg Avenue
Fresno, California 93727
(559) 230-6033

D. Submittal Requirements

An original and two (2) hardcopies of your proposal and an electronic PDF file of the proposal shall be sent with a cover letter to the ARB Program Manager, Mr. John DaMassa, at the address listed in the Contract Requirements section. Hand carried or express mail packages may be delivered to Mr. John DaMassa at the California Air Resources Board, 1001 "I" Street, Sacramento, California 95814.

TABLE 1
PROPOSAL BUDGET SUMMARY

DIRECT COSTS:

1.	Labor & Employee Fringe Benefits (provide detailed breakdown by task and employee on separate sheet [including Subcontractors])	$_____
2.	Equipment (provide detailed breakdown on separate sheet)	$_____
3.	Travel & Subsistence	$_____
4.	Electronic Data Processing	$_____
5.	Photocopying/Printing/Mail/Telephone/FAX	$_____
6.	Materials and Supplies	$_____
7.	Miscellaneous (please specify)	$_____
	TOTAL DIRECT COST:	**$_____**

INDIRECT COSTS:

8.	Overhead (specify rate)	$_____
9.	General & Administrative Expenses (specify rate)	$_____
10.	Other Indirect Costs (please specify)	$_____
11.	Fee or Profit (specify rate)	$_____
	TOTAL INDIRECT COST:	**$_____**

TOTAL DIRECT AND INDIRECT COST: **$_____**

APPENDIX A

CONTRACT LANGUAGE

CONTRACT NO. *05-x CCOS*

SAN JOAQUIN VALLEYWIDE AIR POLLUTION STUDY AGENCY

AND

CONTRACTOR

This Agreement, which shall be effective upon the *DATE*, by and between the SAN JOAQUIN VALLEYWIDE AIR POLLUTION STUDY AGENCY (hereafter "STUDY AGENCY"), a joint powers agency, and *CONTRACTOR* (hereafter "CONTRACTOR").

W I T N E S S E T H:

WHEREAS, STUDY AGENCY has the need to *TASK*;

WHEREAS, STUDY AGENCY released its Request for Proposal entitled "*RFP TITLE*" dated *DATE* ("the RFP"), which is incorporated herein, to those persons determined by STUDY AGENCY to be capable of *TASK*

WHEREAS, CONTRACTOR responded to said RFP by sending STUDY AGENCY its Proposal, dated *DATE*, ("the Proposal"), which is incorporated herein;

WHEREAS, STUDY AGENCY has requested CONTRACTOR to perform such services pursuant to the terms and conditions of its RFP; and

WHEREAS, CONTRACTOR represents that it is willing and able to perform the foregoing services requested by STUDY AGENCY pursuant to the terms and conditions thereof.

NOW, THEREFORE, the parties hereby agree as follows:

1. EMPLOYMENT OF CONTRACTOR

1.1 STUDY AGENCY shall employ CONTRACTOR as an independent Contractor to provide, to the reasonable satisfaction of the STUDY AGENCY, those expert consulting services requested to be performed pursuant to Exhibit A of this Agreement, "Scope of

Work," which is attached hereto and incorporated herein, the RFP, and the Proposal. In the event of any conflict between or among the terms and conditions of this Agreement, the exhibits incorporated herein, and the documents referred to and incorporated herein be resolved by giving precedence in the following order of priority:

1.1.1 To the text of this Agreement, Exhibit A, "Scope of Work," to this Agreement, Exhibit B, "Schedule of Deliverables"; and

1.1.2 To the RFP.

1.2 In addition to those obligations stated in paragraph 1.1 of this Agreement, CONTRACTOR shall provide STUDY AGENCY with one (1) reproducible master copy of each written work product completed pursuant to this Agreement, one (1) bound copy of each written work product, one (1) electronic copy in Adobe Acrobat, and one (1) electronic copy in Microsoft Word.

1.3 All work product that CONTRACTOR shall deliver to STUDY AGENCY hereunder shall be performed according to the work schedule and deadlines for performance identified in Exhibit B, "Schedule of Deliverables," to this Agreement, which is attached hereto and incorporated herein.

1.4 CONTRACTOR shall provide its services through the following key persons: *KEY PERSONS.*

1.5 It is the express intent of the parties to preserve the respective teams of the aforementioned key persons through the entire term of this Agreement. In case of death, illness, or other incapacity of any of the foregoing key persons, CONTRACTOR shall use its best efforts to promptly provide a replacement key person of at least equal professional ability and experience as the key person replaced, without additional cost to STUDY AGENCY. CONTRACTOR may add to or replace persons on its support staff without STUDY AGENCY's approval, provided, however, that replacement support staff personnel shall be of at least equal ability as the person(s) replaced. Notwithstanding anything else stated to the contrary in this

Agreement, it is understood that CONTRACTOR may not replace any of the aforementioned key persons without the prior, express written approval of the STUDY AGENCY.

1.6 Subject to any express limitations established by STUDY AGENCY as to the degree of care and amount of time and expense to be incurred and any other limitations expressly contained in this Agreement, CONTRACTOR shall perform the services under this Agreement with that level of due care and skill ordinarily exercised by other qualified professional consultants in the field of CONTRACTOR's expertise under similar circumstances at the time the services are being performed.

1.7 CONTRACTOR may retain such subContractors and/or subconsultants as CONTRACTOR deems necessary to assist CONTRACTOR in completing the work under this Agreement. Such subContractors and subconsultants, if any, shall be expressly approved in writing by STUDY AGENCY before they are retained to perform work under this Agreement. CONTRACTOR's use of any such subContractors or subconsultants shall not, in any way whatsoever, relieve CONTRACTOR of its obligations under subparagraph 1.1 of this Agreement. It is understood that CONTRACTOR shall be STUDY AGENCY's sole point of contact in the performance of the services covered by this Agreement.

1.8 CONTRACTOR's obligation under this Agreement shall be deemed discharged only after all tasks identified in paragraph 1.1 have been completed and approved by the STUDY AGENCY "Technical Committee."

2. NO THIRD-PARTY BENEFICIARIES

2.1 It is understood that CONTRACTOR's services under this Agreement are being rendered only for the benefit of STUDY AGENCY, and no other person, firm, corporation, or entity shall be deemed an intended third-party beneficiary of this Agreement.

3. TERM

3.1 This Agreement shall become effective upon execution by the parties and shall continue until terminated as provided herein. In no event shall the term of this Agreement extend past *DATE*, without the express, written consent of the parties hereto.

4. TERMINATION

4.1 STUDY AGENCY shall have the right to terminate this Agreement at its discretion, and without cause, at any time upon the giving to CONTRACTOR thirty (30) days' advance, written notice of an intention to terminate. If STUDY AGENCY terminates this Agreement in such event, CONTRACTOR shall be compensated for services satisfactorily provided to STUDY AGENCY up to the date of termination, as reasonably determined by STUDY AGENCY, together with such additional services performed after termination which are expressly authorized in writing by STUDY AGENCY to wind up such work.

4.2 The parties hereto may mutually agree to terminate this Agreement at any time, and in such case, upon any terms as are mutually agreeable, provided that such agreement is made pursuant to a written amendment to this Agreement.

4.3 CONTRACTOR shall have the right to terminate this Agreement immediately if:

4.3.1 STUDY AGENCY defaults in the payment of any sum due to be paid to CONTRACTOR; and

4.3.2 Such default for failure to pay or failure to perform any other obligation hereunder continues thirty (30) days after written notice thereof has been provided by CONTRACTOR to STUDY AGENCY.

4.4 Breach of Agreement: STUDY AGENCY may immediately suspend or terminate this Agreement, in whole or in part, where in the determination of STUDY AGENCY there is:

4.4.1 An illegal or improper use of funds;

4.4.2 A failure to comply with any term of this Agreement;

4.4.3 A substantially incorrect or incomplete report submitted to STUDY AGENCY;

4.4.4 Improperly performed services; or

4.4.5 Any other breach of the Agreement.

In no event shall any payment by STUDY AGENCY constitute a waiver by STUDY AGENCY of any breach of this Agreement or any default which may then exists on the part of CONTRACTOR. Neither shall such payment impair or prejudice any remedy available to STUDY AGENCY with respect to the breach or default. STUDY AGENCY shall have the right to demand of CONTRACTOR the repayment to STUDY AGENCY of any funds disbursed to CONTRACTOR under this Agreement which in the judgment of STUDY AGENCY were not expended in accordance with the terms of this Agreement. CONTRACTOR shall promptly refund any such funds upon demand.

In addition to immediate suspension or termination, STUDY AGENCY may impose any other remedies available at law, in equity, or otherwise specified in this Agreement.

In the event of any breach of this Agreement, STUDY AGENCY, upon the recommendation of the Policy Committee, may, without prejudice to any of its other legal remedies, terminate this Agreement upon five (5) days' written notice to CONTRACTOR. In such event, STUDY AGENCY shall pay CONTRACTOR only the reasonable value of the services theretofore rendered by CONTRACTOR as may be agreed upon by the parties or determined by a court of law, but not in excess of the total Agreement price.

5. DATA

5.1 No reports, professional papers, information, inventions, improvements, discoveries or data obtained, prepared, assembled, or developed by CONTRACTOR pursuant to this Agreement shall be released or made available (except as otherwise provided herein) without prior written approval of the Chief of the Modeling and Meteorology Branch, Planning & Technical Support Division, Air Resources Board. The consent of the Chief of the Modeling and Meteorology Branch, Planning & Technical Support Division, Air Resources Board, shall not be unreasonably withheld.

5.2 All models used must be in the public domain. All model codes, inputs, and outputs, and data obtained, prepared, assembled or developed shall be provided to the Program Manager in a magnetic media acceptable to the Program Manager

6. REPORTS

6.1 CONTRACTOR shall place the following language in a conspicuous place on all monthly progress reports and on the final report:

"The statements and conclusions in this report are those of the Contractor and not necessarily those of the California Air Resources Board, the San Joaquin Valleywide Air Pollution Study Agency, or its Policy Committee, their employees or their members. The mention of commercial products, their source, or their use in connection with material reported herein is not to be construed as actual or implied endorsement of such products."

7. COMPENSATION/INVOICING

7.1 STUDY AGENCY agrees to pay CONTRACTOR and CONTRACTOR agrees to receive compensation at the rate specified in paragraph 7.6 of this Agreement.

7.2 The amount to be paid to CONTRACTOR under this Agreement includes all sales and use taxes incurred pursuant to this Agreement, if any, including any such taxes due on equipment purchased by CONTRACTOR. CONTRACTOR shall not receive additional compensation for reimbursement of such taxes and shall not decrease work to compensate therefor.

7.3 Advance payments shall not be permitted. Payments will be permitted only at which time-equivalent services have been satisfactorily rendered. Progress payments shall be subject to review by the ARB Program Manager and the STUDY AGENCY Technical Committee. Progress payments shall be made monthly upon receipt of an invoice, a monthly progress report, and a claim for payment form, which is attached as Exhibit C and incorporated herein by reference. Invoices will be sent to Chief, Modeling and Meteorology Branch, Planning & Technical Support Division, Air Resources Board, P.O. Box 2815, Sacramento, CA 95812. With respect to the payment period completed, the invoice shall set forth in detail, in accordance with the Agreement budget, charges for time expended on the project,

including the classification of personnel involved in such time expenditure, and the monthly, weekly, or hourly rates for such personnel, as appropriate. The invoice shall also contain an itemization of all materials used for the project, including the purpose of their use and their cost. Payment shall be made within thirty (30) days of receipt of the invoice.

7.4 Concurrently with the invoice, CONTRACTOR shall certify (i.e., through copies of issued invoices, checks, or receipts) that complete payment has been made to any and all subContractors and subconsultants as provided.

7.5 It is understood that all expenses incidental to CONTRACTOR's performance of services under this Agreement shall be borne exclusively by CONTRACTOR.

7.6 In no event shall compensation paid by STUDY AGENCY to CONTRACTOR for the performance of all services under this Agreement exceed *COST*.

7.7 STUDY AGENCY shall be solely responsible for payment and not any of the parties to the Joint Powers Agreement forming the STUDY AGENCY.

7.8 STUDY AGENCY shall withhold payment equal to ten percent (10%) of each monthly invoice until completion of work requested by the STUDY AGENCY Technical Committee on the tasks specified in Exhibit A and approval by the ARB Program Manager and the STUDY AGENCY Technical Committee. It is CONTRACTOR's responsibility to submit an invoice in triplicate for the ten percent (10%) withheld.

7.9 The terms of this Agreement and the services to be provided thereunder are contingent on the approval of funds by the appropriating government agency. Should sufficient funds not be allocated, the services provided may be modified or this Agreement terminated at any time by giving CONTRACTOR thirty (30) days' prior written notice.

8. EXTRA SERVICES

8.1 CONTRACTOR shall not undertake any extra services not enumerated herein unless expressly authorized by STUDY AGENCY through an amendment to this Agreement, which shall be executed in the same manner as this Agreement, or by express,

written authorization if such extra services are being performed by CONTRACTOR to wind up its services under this Agreement pursuant to subparagraph 4.1 of this Agreement.

8.2 When such extra services are being performed, CONTRACTOR shall keep complete records showing that STUDY AGENCY requested such extra services, the hours and description of activities worked by each person who worked on the project, the reason for such extra services, and all the costs and charges applicable to the extra services authorized.

9. INDEPENDENT CONTRACTOR

9.1 In performance of the work, duties, and obligations assumed by CONTRACTOR under this Agreement, it is mutually understood and agreed that CONTRACTOR, including any and all of CONTRACTOR's officers, agents, and employees, will at all times be acting and performing as an independent Contractor, and shall act in an independent capacity and not as an officer, agent, servant, employee, joint venturer, partner, or associate of the STUDY AGENCY or the Policy Committee.

9.2 Furthermore, STUDY AGENCY shall have no right to control, supervise, or direct the manner or method by which CONTRACTOR shall perform its work and function. However, STUDY AGENCY shall retain the right to administer this Agreement so as to verify that CONTRACTOR is performing its obligations in accordance with the terms and conditions thereof. CONTRACTOR and STUDY AGENCY shall comply with all applicable provisions of law and the rules and regulations, if any, of governmental authorities having jurisdiction over matters the subject thereof.

9.3 Because of its status as an independent Contractor, CONTRACTOR shall have absolutely no right to employment rights and benefits available to STUDY AGENCY employees. CONTRACTOR shall be solely liable and responsible for providing all legally required employee benefits. In addition, CONTRACTOR shall be solely responsible and save STUDY AGENCY harmless from all matters relating to payment of CONTRACTOR's employees, including compliance with Social Security, withholding, and all other regulations governing such matters. It is acknowledged that during the term of this Agreement,

CONTRACTOR may be providing services to others unrelated to STUDY AGENCY or to this Agreement.

10. MODIFICATION

10.1 Any matters of this Agreement may be modified from time to time by the written consent of all the parties without, in any way, affecting the remainder.

11. NON-ASSIGNMENT

11.1 Neither party shall assign, transfer, or subcontract this Agreement nor their rights or duties under this Agreement without the prior, express written consent of the other party.

12. INDEMNIFICATION

12.1 CONTRACTOR agrees to indemnify, save, hold harmless, and at STUDY AGENCY's request, defend STUDY AGENCY, its boards, committees, representatives, officers, agents, and employees from and against any and all costs and expenses (including reasonable attorneys fees and litigation costs), damages, liabilities, claims, and losses (whether in contract, tort, or strict liability, including, but not limited to, personal injury, death, and property damage) occurring or resulting to STUDY AGENCY which arises from any negligent or wrongful acts or omissions of CONTRACTOR, its officers, agents, subContractors, subconsultants, or employees in their performance of this Agreement, and from any and all costs and expenses (including reasonable attorneys fees and litigation costs), damages, liabilities, claims, and losses (whether in contract, tort, or strict liability, including, but not limited to, personal injury, death, and property damage) occurring or resulting to any person, firm, corporation, or entity who may be injured or damaged when such injury or damage arises from any negligent or wrongful acts, or omissions of CONTRACTOR, its officers, agents, subContractors, subconsultants, or employees in their performance of this Agreement.

13. INSURANCE

13.1 Without limiting STUDY AGENCY's right to obtain indemnification from CONTRACTOR or any third parties, CONTRACTOR, at its sole expense, shall maintain in full force and effect the following insurance policies throughout the term of this Agreement:

13.1.1 Comprehensive general liability insurance with minimum limits of coverage in the amount of _____ Million Dollars ($) per occurrence;

13.1.2 Commercial automobile liability insurance for owned and non-owned vehicles which covers bodily injury and property damage with a combined single limit with minimum limits of coverage in the amount of _____ Million Dollars ($) per occurrence;

13.1.3 Workers Compensation Insurance, in accordance with California law.

13.2 Such insurance policies shall name STUDY AGENCY, its officers, agents, and employees, individually and collectively, as additional insured but only insofar as the operations under this Agreement are concerned. Such coverage for additional insured shall apply as primary insurance, and any other insurance, or self-insurance, maintained by STUDY AGENCY, its officers, agents, and employees shall be excess only and not contributing with insurance provided under CONTRACTOR's policies herein. This insurance shall not be cancelled or changed without a minimum of thirty (30) days' advance, written notice given to STUDY AGENCY.

13.3 Prior to the commencement of performing its obligations under this Agreement, CONTRACTOR shall provide certificates of insurance on the foregoing policies, as required herein, to STUDY AGENCY stating that such insurance coverages have been obtained and are in full force; that STUDY AGENCY, its officers, agents, and employees will not be responsible for any premiums on the policies; that such insurance names STUDY AGENCY, its officers, agents, and employees, individually and collectively, as additional insured, but only insofar as the operations under this Agreement are concerned; that such coverage for additional insured shall apply as primary insurance, and any other insurance or self-insurance maintained by STUDY AGENCY, its officers, agents, and employees, shall be excess only and not contributing

with insurance provided under CONTRACTOR's policies herein. This insurance shall not be cancelled or changed without a minimum of thirty (30) days' advance, written notice given to the STUDY AGENCY.

13.4 In the event CONTRACTOR fails to keep in effect at all times insurance coverage as herein provided, STUDY AGENCY may, in addition to other remedies it may have, suspend or terminate this Agreement upon the occurrence of such event.

13.5 If the CONTRACTOR is a government entity, then it may self-insure such of those risks identified in paragraphs 13.1.1 through 13.1.3 of this Agreement, provided, however, that:

13.5.1 STUDY AGENCY, its officers, agents, and employees, individually and collectively, shall be named as additional insured (except for Workers Compensation Insurance) on CONTRACTOR's self-insurance plan, but only insofar as the operations under this Agreement are concerned;

13.5.2 Such self-insurance plan shall be reasonably satisfactory to STUDY AGENCY; and

13.5.3 All those provisions identified in subparagraph 13.2 of this Agreement concerning the relationship of CONTRACTOR's primary and STUDY AGENCY's excess insurance to each other, the requirement of CONTRACTOR delivering a certificate of insurance or other suitable evidence to STUDY AGENCY, and the cancellation/change of insurance requirements shall apply to such self-insurance plan.

14. AUDITS AND INSPECTIONS

14.1 CONTRACTOR shall at any time during business hours, and as often as STUDY AGENCY may deem necessary, make available to STUDY AGENCY for examination all of its records and data with respect to the matters covered by this Agreement. CONTRACTOR shall, upon request by STUDY AGENCY, permit STUDY AGENCY to audit and inspect all of such records and data necessary to ensure CONTRACTOR's compliance with the terms of this Agreement.

14.2 CONTRACTOR shall maintain books, records, documents, and other evidence pertaining to the reimbursable time and materials and hold them available for audit and inspection by STUDY AGENCY for a minimum of three (3) years from the date this Agreement is completed or otherwise terminated.

15. BUDGET

15.1 CONTRACTOR shall be authorized to rebudget funds up to a maximum of twenty percent (20%) between major categories in the contract budget as contained in Exhibit A. All rebudgeting in excess of twenty percent (20%) requires the prior written approval of the Chief of the Modeling and Meteorology Branch, Planning and Technical Support Division, Air Resources Board, or his representative. Under no circumstances shall the total contract amount exceed *COST*.

16. NOTICES

16.1 The persons and their addresses having authority to give and receive notices under this Agreement include the following:

STUDY AGENCY: John DaMassa, Chief
Modeling and Meteorology Branch
Planning &Technical Support Division
Air Resources Board
P.O. Box 2815
Sacramento, CA 95812

CONTRACTOR: *CONTACT PERSON*
ADDRESS

16.2 Any and all notices between STUDY AGENCY and CONTRACTOR provided for or permitted under this Agreement or by law shall be in writing and shall be deemed duly served when personally delivered to one of the parties, or in lieu of such personal services, when deposited in the United States mail, postage prepaid, addressed to such party.

17. DISPUTES

17.1 In the event a dispute between CONTRACTOR and the ARB Program Manager, CONTRACTOR should first discuss the problem informally with the ARB Program Manager. If the dispute is not resolved, the following two-step procedure shall be followed by both parties:

17.1.1 CONTRACTOR and the ARB Program Manager shall each write to the STUDY AGENCY Technical Committee stating the issues in the dispute and the basis for their positions. The STUDY AGENCY Technical Committee shall make a determination within fourteen (14) working days after receipt of the written communications from CONTRACTOR and ARB Program Manager. The STUDY AGENCY Technical Committee shall notify CONTRACTOR and the ARB Program Manager in writing of the decision and the reasons therefor.

17.1.2 If CONTRACTOR or the ARB Program Manager disagrees with the STUDY AGENCY Technical Committee's decision, written notice shall be provided to the other party of an intention to seek non-binding third-party mediation of the dispute. Both parties must agree to submit to mediation. The dispute shall be considered by a panel of three (3) experts in the field of dispute. Each party shall have the right to select one panelist. The selected panel will then select a third member. The panel shall set a hearing date, time, and place convenient to the parties within thirty (30) days of panel selection. Within five (5) working days of the hearing date, each party shall submit a written statement to the panel and the other party setting forth the issues and arguments to be presented. The hearing shall be informal with an opportunity for both parties to present their arguments. The panel shall provide the parties with a written decision within thirty (30) days of the hearing. The decision shall be binding on the parties, unless referred to the Governing Board within thirty (30) days. The costs of the panel shall be borne equally by the parties.

17.1.3 If either party has so requested, the matter shall be heard by the STUDY AGENCY Board, and the Board's determination shall be final.

18. POLITICAL ACTIVITY PROHIBITED

18.1 None of the funds, materials, property, or services provided under this Agreement shall be used for any political activity, or to further the election or defeat of any candidate for public office contrary to federal or state laws, statutes, regulations, rules or guidelines.

19. LOBBYING PROHIBITED

19.1 None of the funds provided under this Agreement shall be used for publicity, lobbying, or propaganda purposes designed to support or defeat legislation before the Congress of the United States of America or the Legislature of the State of California.

20. CONFLICT OF INTEREST

20.1 No officer, employee, or agent of STUDY AGENCY who exercises any function or responsibility for planning and carrying out the services provided under this Agreement shall have any direct or indirect personal financial interest in this Agreement. CONTRACTOR shall comply with all federal and state conflict of interest laws, statutes, and regulations which shall be applicable to all parties and beneficiaries under this Agreement and any officer, agent, or employee of STUDY AGENCY.

21. COMPLIANCE WITH LAWS

21.1 CONTRACTOR shall comply with all federal and state laws, statutes, regulations, rules, and guidelines which apply to its performance under this Agreement.

22. SEVERABILITY

22.1 In the event that any one or more provisions contained in this Agreement shall for any reason be held to be unenforceable in any respect by a court of competent jurisdiction, such holding shall not affect any other provisions of this Agreement, and the Agreement shall then be construed as if such unenforceable provisions are not a part hereof.

23. TIME IS OF THE ESSENCE

23.1 It is understood that for CONTRACTOR's performance under this Agreement, time is of the essence. The parties reasonably anticipate that CONTRACTOR will, to

the reasonable satisfaction of STUDY AGENCY, complete all services to be provided hereunder by *DATE*, provided that CONTRACTOR neither causes nor is caused unreasonable delay in such performance.

24. GOVERNING LAW

24.1 Venue for any action arising out of or relating to this Agreement shall only be in Fresno County, California.

24.2 The rights and obligations of the parties and all interpretation and performance of this Agreement shall be governed in all respects by the laws of the State of California.

25. BINDING UPON SUCCESSORS

25.1 This Agreement, including all covenants and conditions maintained herein, shall be binding upon and inure to the benefit of the parties, including their respective successors-in-interest, assigns, and legal representatives.

26. INSPECTION AND RELEASE OF DATA

26.1 Upon termination or expiration of this Agreement, all data which is received, collected, produced, or developed by CONTRACTOR under this Agreement shall become the exclusive property of STUDY AGENCY, provided, however, CONTRACTOR shall be allowed to retain a copy of any non-confidential data received, collected, produced, or developed by CONTRACTOR under this Agreement, subject to STUDY AGENCY's exclusive ownership rights stated herein. Accordingly, CONTRACTOR shall surrender to STUDY AGENCY all such data which is in its (including its subContractors, subconsultants, or agents) possession, without any reservation of right or title not otherwise enumerated herein.

26.2 STUDY AGENCY shall have the right, at reasonable times during the term of this Agreement, to inspect and reproduce any data received, collected, produced, or developed by CONTRACTOR under this Agreement. No reports, professional papers, information, inventions, improvements, discoveries, or data obtained, prepared, assembled, or developed by CONTRACTOR, pursuant to this Agreement, shall be released or made available

(except to STUDY AGENCY) without prior, express written approval of STUDY AGENCY while this Agreement is in force.

27. NONDISCRIMINATION

27.1 The provisions of Exhibit D, the "Nondiscrimination Clause," is attached hereto and incorporated herein.

28. ENTIRE AGREEMENT

28.1 This Agreement, including all attached exhibits and documents which are referred to and incorporated herein, constitutes the entire agreement between CONTRACTOR and STUDY AGENCY with respect to the subject matter hereof and supersedes all previous negotiations, proposals, commitments, writings, advertisements, publications, and understandings of any nature whatsoever unless expressly included in this Agreement.

29. WAIVER

29.1 No waiver of any breach of this Agreement shall be held to be a waiver of any other or subsequent breach. All remedies afforded in this Agreement shall be taken and construed as cumulative, that is, in addition to every other remedy provided therein or by law. The failure of STUDY AGENCY to enforce at any time any of the provisions of this Agreement or to require at any time performance by CONTRACTOR of any of the provisions therefor, shall in no way be construed to be a waiver of such provisions nor in any way affect the validity of this Agreement or any part thereof or the right of STUDY AGENCY to thereafter enforce each and every such provision.

IN WITNESS WHEREOF, the parties hereto have executed this Agreement as of the day and year first hereinabove written through their respective duly appointed and authorized representatives.

STUDY AGENCY
SAN JOAQUIN VALLEYWIDE AIR POLLUTION STUDY AGENCY

By _____

Chair

CONTRACTOR

By_____

Print Name and Title

_____

Tax I.D. No.

Recommended for approval:
SAN JOAQUIN VALLEYWIDE AIR POLLUTION STUDY AGENCY POLICY COMMITTEE

By _____

Title _____

Approved as to legal form:
SAN JOAQUIN VALLEY UNIFIED AIR POLLUTION CONTROL STUDY AGENCY

By_____

Philip M. Jay

Study Agency Counsel

Recommended for approval:
SAN JOAQUIN VALLEYWIDE AIR POLLUTION STUDY AGENCY TECHNICAL COMMITTEE

By _____

Title _____

Approved as to accounting form:
SAN JOAQUIN VALLEY UNIFIED AIR POLLUTION CONTROL STUDY AGENCY

By _____

Roger W. McCoy

Finance Officer